Bangalore Electricity Supply Company Limited.

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BOQ for Automation of Non-DAS feeders in BMAZ area BESCOM

PART A: Design, Test, Supply, Installation of New DAS Compatible RMUs, Commission and Integrate of RTUs with DAS Control Centre for Automation of Non-DAS Feeders in BMAZ Area.

Supply Portion:

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total Price Excl. GST (INR)
1	5 Way RMU, 2OD + 3VL (One Incomer + Three Breakers + One Outgoing) 630 Amps with Copper Busbar	1	Unit		
2	3 Way RMU, 2OD + 1VL (One Incomer + One Breakers + One Outgoing) 630 Amps with Copper Busbar	6	Unit		
3	Bed Concreting with CC 1:2:4 [M-15] Using 20mm Nominal size graded crushed coarse aggregates	3.52	CMT		
4	Foundation with Reinforcement CC 1:2:4 [M-15] Using 20mm Nominal size graded crushed coarse aggregates as per Labour Charges.	7.92	CMT		
5	Providing Reinforecement TMT Fe 550/550	220	Kg		
6	Supplying of Frame of MS Channel 100x50 mm and MS angle 40x40x5 mm welding etc., complete.	287.5	Kg		
7	Rod type earthing with 40 mm Dia, 3 Mtr long MS rod as per specification & drawing including digging of pit & fixing	14	No		
8	11 kV, 3 Core, 95 Sqmm XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for 95 Sqmm	0.96	KM		
9	11 kV, 3 Core, 240 Sqmm XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for 240 Sqmm	0.115	KM		
10	11 kV, 3 Core, 400 Sqmm XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for 400 Sqmm	0.36	KM		
11	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable 3X95 Sqmm	8	Set		
12	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable 3X240 Sqmm	1	Set		
13	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable 3X400 Sqmm As per BESCOM SR-2023-24	14	Set		
14	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule 3X95 Sqmm	8	Set		
15	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule 3X240 Sqmm	1	Set		
16	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule 3X400 Sqmm	14	Set		
17	RTU (Remote Terminal Unit) Input Voltage: 16V DC to 32V DC Type: IsolatedUn-Grounded type-Input ground and output ground are isolated from each other Output Voltage: 24V DC Fixed Output Current: 2.5 Amp`s Fixed RTU Software/Firmware: RTU have configuration and maintenance softwaretool. Compatible for existing DAS System)	7	Unit		
18	Test Sets with license key for integration testing between RMU, RTU and control centre as described in technical specifications.	1	No.		
19	Lettering the RMU with enamel paint and also writing single line diagram of each panel, caution Board, Danger Board etc., including cost of Paint, Brush etc.,	23	Nos/ Per Panel		
	Total Supply Portion				

Service Portion

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total price
1	Earth Excavation for RMU Foundation depositing of earth on bank up to a lead of 50 Mtr and with a lift up to 1.5 Mtr	41.41	cmt		
2	Labour charges for Fixing foundation frame of MS channel 100x50 mm and MS angle 40x40x5 mm welding, fixing in concrete, aligning the RMU on foundation bed, assembly of units, connecting Bus Bars from panel to panel etc., complete.	23	No		
3	Installation, testing and commissioning of RTU	7	No		
4	Digging of Pit for providing GI Pipe type Earthing.	14	Per Pit		
5	Transporting New RMU (5Way DAS Compatible) unit from store to work spot including loading, unloading. (No separate crane charges)	1	No		
6	Transporting New RMU 3Way(3 Panel) DAS Compatible per panel rate considered] unit from store to work spot including loading, unloading. (No separate crane charges)	18	per panel		
7	Making heat shrinkable straight through joint.	23	No		
8	Making and fixing heat shrinkable type pot head .	23	No		
9	Providing chain link fencing 50 mm size of 8 guage properly stretched between rectangular Poles and fixed with suitable bolts & nuts, the free ends shall be welded to the Pole and block pipe at top and bottom as required including cost of all materials, labour, lead and lifts, cutting, bending wherever necessary, wastage and lapping etc., complete as per the direction of the engineer incharge for work including two coats of approved quality paint over one coat of primer paint.	140	Sqmtr		
	Total Service Portion				

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total Price Excl. GST (INR)
	Total Part A Cost				
PART B: Design, Test, Supply, Replacement of Non-DAS RMUs by DAS Compatible RMUs, Commission and Integrate of RTUs with DAS Control Centre for Automation of Non-DAS Feeders in BMAZ Area.					
Supply Portion:					
Sl No.	**Description**	**Qty**	**Unit**	**Unit Price (INR)**	**Total Price Excl. GST (INR)**
1	5 Way RMU, 2OD + 3VL (One Incomer + Three Breakers + One Outgoing) 630 Amps with Copper Busbar	11	Unit		
2	4 Way RMU, 2OD + 2VL (One Incomer + Two Breakers + One Outgoing) 630 Amps with Copper Busbar	8	Unit		
3	3 Way RMU, 2OD + 1VL (One Incomer + One Breakers + One Outgoing) 630 Amps with Copper Busbar	15	Unit		
4	Bed Concreting with CC 1:2:4 [M-15] Using 20mm Nominal size graded crushed coarse aggregates	18.08	CMT		
5	Foundation with Reinforcement CC 1:2:4 [M-15] Using 20mm Nominal size graded crushed coarseaggregates as per Labour Charges.	40.68	CMT		
6	Providing Reinforecement TMT Fe 550/550	1130	Kg		
7	Supplying of Frame of MS Channel 100x50 mm and MS angle 40x40x5 mm welding etc., complete.	1650	Kg		
8	Rod type earthing with 40 mm Dia, 3 Mtr long MS rod as per specification & drawing including digging of pit & fixing	68	No		
9	11 kV, 3 Core, XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for **95 Sqmm**	1.06	KM		
10	11 kV, 3 Core, XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for **240 Sqmm**	0.165	KM		
11	11 kV, 3 Core, XPLE HTUG Cable with pressure extruded inner sheeth, ROUND WIRE ARMOURED as per IS-7098 (Part-2) Armouring wires dia and Resistivity as per IS-3975 for **400 Sqmm**	1.36	KM		
12	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable **3X95 Sqmm**	53	Set		
13	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable **3X240 Sqmm**	11	Set		
14	Heat Shrinkable Indoor Type Cable termination kit for XLPE Cable **3X400 Sqmm**	68	Set		
15	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule **3X95 Sqmm**	53	Set		
16	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule **3X240 Sqmm**	11	Set		
17	Heat Shrinkable Straight through jointing kit for XLPE Cable with copper lug and Al ferrule **3X400 Sqmm**	68	Set		
18	RTU (Remote Terminal Unit) Input Voltage: 16V DC to 32V DC Type: IsolatedUn-Grounded type-Input ground and output ground are isolated from each other Output Voltage: 24V DC Fixed Output Current: 2.5 Amp`s Fixed RTU Software/Firmware: RTU have configuration and maintenance softwaretool. Compatible for existing DAS System)	34	Unit		
19	Test Sets with license key for integration testing between RMU, RTU and control centre as described in technical specifications.	1	No.		
20	Lettering the RMU with enamel paint and also writing single line diagram of each panel, caution Board, Danger Board etc., including cost of Paint, Brush etc.,	132	Nos/Per Panel		
	Total Part B supply portion				
Service Portion PART B					
Sl No.	**Description**	**Qty**	**Unit**	**Unit Price (INR)**	**Total price**
1	Earth Excavation for RMU Foundation depositing of earth on bank up to a lead of 50 Mtr and with a lift up to 1.5 Mtr	209.55	cmt		
2	Labour charges for Fixing foundation frame of MS channel 100x50 mm and MS angle 40x40x5 mm welding, fixing in concrete, aligning the RMU on foundation bed, assembly of units, connecting Bus Bars from panel to panel etc., complete.	132	No		
3	Installation, testing and commissioning of RTU	34	No		
4	Digging of Pit for providing GI Pipe type Earthing.	68	Per Pit		
5	Transporting New RMU (5Way DAS Compatible) unit from store to work spot including loading, unloading. (No separate crane charges)	11	No		
6	Transporting New RMU [4Way(4 Panel) and 3Way(3 Panel) DAS Compatible per panel rate considered] unit from store to work spot including loading, unloading. (No separate crane charges)	77	Nos/per panel		
7	Dismantle of (Coventional) 5Way RMU	11	No		
8	Dismantle of (Coventional) 4Way RMU	8	No		
9	Dismantle of (Coventional) 3Way RMU	15	No		
10	Transporting released 5Way RMU (Conventional) unit from work spot to store including loading, unloading. (No separate crane charges)	11	No		
11	Transporting released 4 Way RMU(Coventional) (4 Panel) (Per panel rate is cosidersed) unit from work spot to store including loading, unloading. (No separate crane charges) (4Panel)	32	Nos/per panel		
12	Transporting released 3 Way RMU(Coventional) (3 Panel) (Per panel rate is cosidersed) unit from work spot to store including loading, unloading. (No separate crane charges) (4Panel)	45	Nos/per panel		
13	Making heat shrinkable straight through joint.	132	No		
14	Making and fixing heat shrinkable type pot head .	132	No		

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total Price Excl. GST (INR)
15	Providing chain link fencing 50 mm size of 8 guage properly stretched between rectangular Poles and fixed with suitable bolts & nuts, the free ends shall be welded to the Pole and block pipe at top and bottom as required including cost of all materials, labour, lead and lifts, cutting, bending wherever necessary, wastage and lapping etc., complete as per the direction of the engineer incharge for work including two coats of approved quality paint over one coat of primer paint.	680	Sqmtr		
16	Demolition of RMU Foundation for 34 nos of Conventional RMUs.	102	Cubic Meter		
	Total Service Portion				
	Total Part B Cost				

PART C: <u>Spares</u> requirement for the commission and Integrate of existing DAS compatible RMUs with DAS Control Centre for Automation of Non-DAS Feeders in BMAZ Area.

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total price
	Spares Required for automation of Non-DAS Feeder to Integrate SCADA RMUs and RTUs with DAS Control Centre				
1	Multi Function Meter(Make: EL Measure, RISH3440, RISH 3430, Secure)	45	Nos		
2	Battery Charger unit 24V 10A or 24V 5A or 12V 10A or 12V 5A unit	50	Nos		
3	Battery charger with input 230V AC output 24V DC 12V	70	Nos		
4	12V, DC 26Ah Battery	300	Nos		
5	HT (HRC)Fuse (AT/PT)	75	Nos		
6	Auxillary Transformer (AT)	35	Nos		
7	Potential Transformer (PT)	45	Nos		
8	FPI Full kit	40	Nos		
9	Voltage presence Indication switch (VPIS) set	40	Nos		
10	12V SMPS	45	Nos		
11	24V SMPS	50	Nos		
12	Current transformer for Protection -200/1A	90	Nos		
13	Current transformer for metering 400/1A	30	Nos		
14	Rear Door	20	Nos		
15	Motorization 24V DC/110V DC/230V AC	50	Nos		
16	Relay Card	40	Nos		
17	Interlock Card	25	Nos		
18	Auxiliary Contactor	40	Nos		
19	Motorization kit for Circuit breaker	60	Nos		
20	AB3 card for VL/OD	30	Nos		
21	AB3 card for OD	25	Nos		
22	AC Protector	20	Nos		
23	OD Internal operating Mechanism	25	Nos		
24	VL Internal operating Mechanism	30	Nos		
25	Local/Remote Switch	70	Nos		
26	Door Dampnersor Hydrolic Rods	45	Set		
27	RMU Partial Control Wiring	20	Nos		
28	Civil Work including renovation of RMU foundation by providing basic concrete work plastering Etc…(Including required material and labour cost) (Per unit=LS)	30	LS		
29	2 pole MCB	25	Nos		
30	Single Pole MCB	20	Nos		
31	Auxillary switch VL	30	Nos		
32	Auxillary switch OD	15	Nos		
33	Terminal Blocks	40	Nos		
34	1Sqmm wires	10	Mtr		
35	1.5Sqmm wires	10	Mtr		
36	2.5Sqmm wires(R Y B and black)	35	Mtr		
37	25 Sqmm cable CT and PT connection	30	Mtr		
38	Mono Meter	15	Nos		
39	Cable box interlocks	25	Nos		
40	Shunt Trip Coil 24V DC or 220V DC or 230V AC	30	Nos		
41	Operating Handle Manual or Motorised	20	Nos		
42	Cable Boots	10	Set		
43	SF6 Gas refilling	150	kg		
44	Cable Clamps	10	Nos		
45	Mechanism for C function Disconnector	15	Nos		
46	24V DC spring Charge Motor	25	Nos		
47	Interlock Card	40	Nos		
48	CT Assemble Kit	10	Nos		
49	RS485 Communication two core Cable with Earth Sleeve	15	Nos		
50	Value of Cosumables (Minor Spares) Per Unit = Per RMU	6	Per Unit		
51	Bush Safety Rubber	40	Nos		
52	Protection Relay	85	Nos		
53	Repairing the broken damaged door of RMU with necessary hinges, welding etc., with necessary paint touch up including supply of paint for touch up.	25	Per door		
54	Extra for Fabrication supply and fixing of Stand fabricated using slotted angle /L angle of size 6 mmx 50mm for mounting out door/indoor A.C. unit/ Batteries	45	Each		
55	9.6 kV, 200 Amps long duration porcelain housed Surge arrestors	25	Each		

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total Price Excl. GST (INR)
56	Miscellaneous(AC/DC MCB, 12v/24v control card, LT fuses, relay cell, FPI cell, Relay fuses, NO/NC latches, Limit switch, any internal wiring, wiring knobs, Relay and Meter Communication TBs, TB's, Latch Relays, clamps for installation of Antenna, Antenna bed, Tripping Coil & closing coil, ON/OFF push button, Earth Selector switch, Emergency push button, Stopper switch, Door limit switch, connecting jumps, A1 Jumps, Bushings assembly, Bush connecting Aiuminium shafts, Amphenal female connectors, Amphenal Female connectors rewiring, control cable for 24pin connectors, SF6 gas pressure switch, Connecting wires, washers gaskets, Vermin proof, bolts, nuts, Insulators, Bus bar support insulators, Spring/M.S. Tube VCRMU, etc..)	Lumpsum			
Total Part C					

PART D: Design, Test, Supply, Installation of New RTUs for the existing DAS Compatible RMUs and integrate with DAS Control Centre for Automation of Non-DAS Feeders in BMAZ Area.

Supply Portion:

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total Price Excl. GST (INR)
1	RTU (Remote Terminal Unit) Input Voltage: 16V DC to 32V DC Type: IsolatedUn-Grounded type-Input ground and output ground are isolated from each other Output Voltage: 24V DC Fixed Output Current: 2.5 Amp`s Fixed RTU Software/Firmware: RTU have configuration and maintenance softwaretool. Compatible for existing DAS System)	127	Unit		
2	Test Sets with license key for integration testing between RMU, RTU and control centre as described in technical specifications.	3	No.		
Total Supply Portion					

Service Portion

Sl No.	Description	Qty	Unit	Unit Price (INR)	Total price
1	Installation, testing and commissioning of RTU	127			
	Total Service Portion				
Total Part D Cost					

Total amount put to tender exclusive of GST (Part A+Part B+Part C+Part D) +Area specific loading = 15,20,55,373/- (Rs. Fifteen Crores Twenty Lakhs Fifty Five Thousand Three Hundred Seventy Three only/